RESPONSE TO ARIZONA GAME AND FISH DEPARTMENT SCOPING COMMENTS ON GUNNISON COPPER PROJECT

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Date: February 27, 2018

Project No.: 1979.01

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APPENDIX

1. INTRODUCTION

The Arizona Game and Fish Department (AGFD) provided comments (AGFD 2018) to the U.S. Environmental Protection Agency (EPA) regarding EPA's proposal to issue a Class III Underground Injection Control (UIC) Area Permit for Excelsior Mining Arizona, Inc. (Excelsior) to construct and operate the Gunnison Copper Project (Project). Specifically, AGFD (2018) asserted that many wildlife species of conservation interest, including species listed under the Endangered Species Act (ESA), may occur within the vicinity of the Project, suggested that these species may be impacted by the Project, recommended that potential impacts to these species be evaluated along with any potential impacts to surface water features within the vicinity of the Project, and suggested that the Project is subject to review under the National Environmental Policy Act (NEPA).

AGFD (2018) based their comments on a report (Report) generated by their Environmental Review Tool that considered a Project footprint of approximately 323 acres, plus a five-mile buffer around the Project footprint (AGFD 2018). The Report indicates that there are 12 special-status species with documented occurrences within five miles of the Project footprint, including the federally listed Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*; LLNB) and Chiricahua Leopard Frog (*Lithobates chiricahuensis*; CLF). The report also indicates that 79 Species of Greatest Conservation Need (SGCN) and 11 Species of Economic and Recreation Importance (SERI) are predicted to occur within five miles of the Project footprint (AGFD 2018). On the basis of the Report, AGFD (2018) implies that the Project could have unspecified "significant" impacts on these wildlife species.

There are multiple issues that undermine the credibility of AGFD's comments. First, there are numerous flaws associated with AGFD's use of the Environmental Review Tool to suggest that the Project will impact wildlife species. Second, AGFD fails to acknowledge that potential Project impacts to wildlife species listed under the ESA have already been disclosed and evaluated by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA. Last, AGFD's suggestion that the Project may require review under NEPA is simply incorrect and has been explicitly addressed by substantial case law.

Because of these issues, AGFD's analysis relies wholly on unsupported implications rather than the best scientific data available. Consequently, AGFD misrepresents available information, misleads readers about potential Project impacts to wildlife species, and wholly ignores the fact that potential effects of the Project on wildlife have already been disclosed and analyzed by the UIC permitting process. We discuss these issues in greater detail in the following sections.

2. AGFD MISUSES THEIR OWN ENVIRONMENTAL REVIEW TOOL

As an initial matter, we emphasize that the Report contains disclaimers that place explicit constraints on the appropriate use of AGFD's own Environmental Review Tool. Among other caveats, these disclaimers note that the Environmental Review Tool "is a preliminary environmental screening tool", "is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of

the project area", and is "not intended to replace…the Departments [sic] review of site-specific projects." Despite these warnings, AGFD (2018) relies exclusively on the Report to support its claim that the Project may impact large numbers of wildlife species while ignoring entirely the site-specific biological information collected to support the permitting of the Project, namely the Biological Evaluation (BE; Darling Geomatics 2016). As such, AGFD has used the Environmental Review Tool in a manner that is clearly inappropriate on its face.

Notwithstanding this fundamental issue, AGFD's use of the Environmental Review Tool to inform Project-specific concerns is plagued by methodological flaws. Because systematic surveys for SGCN and SERI have not been conducted throughout Arizona, the Report relies on species distribution models to predict their occurrence near the Project. There are two sources of problems in using these models to imply Project-related impacts to SGCN and SERI. Namely, these models:

1) use large-scale mapping to infer the presence of species on a small, Project-specific scale, and
2) use historical records and expert opinion in lieu of survey data to predict contemporary species occupancy.

AGFD (2018) neither acknowledges nor discusses the shortcomings that arise from these problems. We discuss these problems in greater detail in **Sections 2.1**, and **2.2**, respectively. In **Section 2.3**, we demonstrate that AGFD's models yield unreasonable predictions of contemporary species occupancy.

2.1. Problems Associated with Using Large-scale Mapping to Infer the Presence of Species on a Small, Project-Specific Scale

Per AGFD (2012), AGFD's distribution models used to predict SGCN and SERI occurrence vary based on species-specific information. However, there are four primary data sources that inform the models for all species: a vegetation layer from the Southwest Regional Gap Analysis Project (SWReGAP; http://swregap.nmsu.edu/), a slope dataset, an elevation dataset, and a dataset delineating watersheds at the USGS HUC-10 scale (Habimap 2018).

The use of large-scale GIS layers such as SWReGAP limits the ability of distribution models to predict SGCN occurrence on a smaller, Project-specific scale. Although the data provided by SWReGAP are resolved at a pixel size of 30 square meters, the appropriate resolution of such a dataset is much broader. Notably, the developers of SWReGAP explicitly caution against the use of such data at scales smaller than 1,000 hectares (2,471 acres; Boykin et al. 2007). This threshold is dramatically larger than the 323-acre Project footprint considered by AGFD (2018), but AGFD fails to account for the increased likelihood of erroneous predictions as a result of this disparity.

The use of known occurrence records to inform distribution models also suffers from a scale issue. For a given species, the models limit distribution predictions to watersheds resolved at the HUC-10

scale with known occurrences of that species. In combination with the elevation and vegetation data, this approach creates models in which it is assumed "that if a species was known to occur in a portion of a watershed within a specific elevational range and within specific vegetation types, then it should occur in other areas of the watershed that have the associated vegetation types and fall within that elevational range" (Habimap 2018). Considering that HUC-10 watersheds are likely to be much larger than a specific project, and further that "for most species, validation with [Arizona's Heritage Data Management System] HDMS data has not yet occurred" (AGFD 2012), caution must be exercised when interpreting the output of these models on a Project-specific scale.

This is exemplified in the case of the Project, as the 323-acre Project footprint considered by AGFD comprises just 0.03 percent of the 1,058,221-acre HUC-10 watershed in which the Project is situated. However, AGFD (2018) makes no attempt to ascertain whether the large-scale assumptions inherent in their models yield reasonable predictions on a Project-specific scale. For example, AGFD's models predict that CLF occurs throughout the entire 1,058,221-acre HUC-10 watershed in which the Project is situated, as well as numerous other entire HUC-10 watersheds throughout southeastern Arizona (**Exhibit 1**). Clearly, the entire HUC-10 does not consist of the permanent and semi-permanent aquatic systems that are considered habitat for the species; CLF habitat is described as a "wide variety of permanent and semi-permanent aquatic systems in oak, mixed oak and pine woodlands, [and] also chaparral, grassland, and desert habitats" (AGFD 2015). Moreover, as disclosed in the BE (Darling Geomatics 2016), there is only one feature in the Project footprint that could potentially support CLF, but it was never detected during six consecutive years of reconnaissance. This illustrates how AGFD's large-scale modelling framework fails to accurately predict species occupancy on a Project-specific scale and does not reflect Project-specific data.

2.2. Problems Associated with Using Historical Records and Expert Opinion in Lieu of Data to Predict Contemporary Species Occupancy

The scale-related issues described in **Section 2.1** are compounded by the use of historical SGCN records and expert opinion in distribution models. For example, consider that AGFD's (2018) Report includes the ocelot (*Leopardus pardalis*) in the list of 79 SGCN predicted to occur within the vicinity of the Project. Given AGFD's modelling approach (Habimap 2018), and considering that there are no documented occurrences of this species within five miles of the Project (AGFD 2018), we infer either that there are historical records of ocelot elsewhere in the HUC-10 watershed in which the Project is situated, or that this species is expected to occur in the watershed based solely on expert opinion.

If there are historical records of ocelot elsewhere in the HUC-10 watershed in which the Project is situated, then the models tacitly assume that "if [the ocelot] was known to occur in a portion of [the 1,058,221-acre] watershed within a specific elevational range and within specific vegetation types, then it should occur in other areas of the [1,058,221-acre] watershed that have the associated vegetation types and fall within that elevational range" (Habimap 2018). This assumption is inappropriate. To

our knowledge, ocelot have never been conclusively documented near the Project, and the nearest verified sighting occurred in 2009, approximately 30 miles southwest of the Project in the Whetstone Mountains (USFWS 2017b). This demonstrates how the use of historical occurrence records in distribution models could result in inaccurate predictions of contemporary species occupancy on a Project-specific scale. However, AGFD (2018) fails to acknowledge this problem or account for how it could influence the predicted occurrence of other wildlife species near the Project.

The use of expert opinion in lieu of data to inform distribution models is also fraught with limitations. For example, even in the absence of historical records or other field-collected data of ocelot in a HUC-10 watershed, expert opinion could establish that it occurs somewhere within that watershed (AGFD 2012). Consequently, given AGFD's methodology, ocelot could be assumed to occur throughout a given watershed based solely on expert opinion [without regard to actual on-the-ground survey data which contradict the models]. Considering the rarity of this species in Arizona (USFWS 2017b), this possibility casts doubt upon the reliability of AGFD's methodology. More broadly, incorporating expert opinion into distribution models is known to affect their performance, and caution has been explicitly advised in the interpretation of such models (e.g. Seoane et al. 2005). Indeed, the incorporation of expert opinion is known to weaken the predictive capacity of some distribution models (Seoane et al. 2005) and can even cause models to perform worse than those that do not utilize expert opinion (Charney 2012). Unsurprisingly, management decisions based upon such models have been shown to be questionable (e.g. Schlossberg and King 2009). However, AGFD (2018) neither acknowledges the known limitations of this approach nor exercises the caution urged by the scientific literature in their implementation and interpretation thereof. Considered alongside the other problems discussed in **Sections 2.1** and **2.2**, AGFD's models cannot be relied upon to inform Project-specific concerns.

2.3. AGFD'S PREDICTIONS OF CONTEMPORARY SPECIES OCCUPANCY ARE DEMONSTRABLY UNREASONABLE: THE CASE OF DESERT SUCKER (*CATOSTOMUS CLARKII*)

Looking beyond the methodological flaws discussed in **Sections 2.1** and **2.2**, AGFD's models yield predictions that are readily discredited by site- and species-specific information. This is exemplified in the case of the desert sucker (*Catostomus clarkii*). AGFD (2018) predicts that desert sucker occurs south of the Project, in portions of Dragoon Wash (**Exhibit 2**). Per AGFD, desert sucker can be found "in rapids and flowing pools of streams and rivers" (AGFD 2002). Comparing AGFD's habitat description to ground conditions thus provides a straightforward test of whether AGFD's models yield reasonable predictions of contemporary species occupancy. Importantly, aerial photography in the Environmental Review Tool indicates that there are times during which the portion of Dragoon Wash closest to the Project is completely dry and lacks the extensive riparian vegetation that is normally associated with perennial water (**Exhibit 3**). Similarly, EPA watershed data indicate that this portion of Dragoon Wash is characterized by extremely low flow, with a mean annual flow volume of 0.51 cubic feet per second (EPA 2018). Considering that desert sucker tends to be found in streams

characterized by higher flow (Ivanyi 1989), and that flows below five cubic feet per second are associated with drastic reductions in desert sucker habitat (BLM 2013), it is not appropriate to conclude that this portion of Dragoon Wash is habitat for the desert sucker. However, AGFD (2018) makes no effort to condition their predictions on pertinent site- or species-specific data. As illustrated here, this results in predictions of species occupancy in areas that clearly lack appropriate habitat. As such, these predictions referenced by AGFD (2018) cannot be trusted.

Collectively, the issues discussed in **Sections 2.1**, **2.2** and **2.3** demonstrate the shortcomings of AGFD's use of the Environmental Review Tool. Instead of reviewing the available site-specific biological information to inform questions concerning Project-related impacts to wildlife, AGFD (2018) relies on predictive models with clear limitations to conclude that many SGCN will occur near the Project and simply presupposes that they could all be affected by Project activities. As such, AGFD (2018) overstates the number of SGCN that actually occur near the Project and provides no basis for how SGCN could actually be affected by the Project. AGFD (2018) misuse of AGFD's own Environmental Review Tool therefore results in a misleading and cursory analysis that is wholly insufficient to support the claim that the Project "may have significant impacts on wildlife" (AGFD 2018).

3. AGFD IGNORES PRIOR EVALUATIONS OF PROJECT IMPACTS

AGFD (2018) raises concerns about potential Project impacts to wildlife, including species listed under the ESA. However, the potential for such impacts has already been evaluated by Excelsior, EPA, and USFWS. Excelsior prepared a BE (Darling Geomatics 2016) which listed wildlife species known to occur near the Project, analyzed the potential for special-status species to occur near the Project and evaluated potential Project-related impacts to special-status species. In EPA's Statement of Basis (2017) regarding the issuance of a draft permit for the Project, it disclosed that it consulted with USFWS under Section 7 of the ESA. Furthermore, the USFWS concurred with the EPA that the Project will not adversely affect any listed species (USFWS 2017a). The transmittal of USFWS' concurrence was copied directly to the author of AGFD (2018). As such, not only has AGFD's call for an evaluation of potential Project-related impacts to special-status species already been satisfied, AGFD knew that these analyses had been completed.

AGFD (2018) also raises concerns about potential Project-related impacts to surface water. However, the amount of surface water near the Project is minimal. Although there is one ephemeral stock pond near the Project, aerial imagery spanning 24 years suggests that it has rarely held water during the past decade (**Appendix A**), and annual reconnaissance of the stock pond from 2011 to 2016 indicated that it does not support any special-status wildlife species (Darling Geomatics 2016). Moreover, the BE reports there are no perennial water features, nor habitat for any species that rely on permanent water or saturated soils in the Analysis Area (Darling Geomatics 2016). As such, AGFD's concerns about Project-related impacts to surface water are unfounded, the potential for such impacts has already

been disclosed by the BE developed for the Project (Darling Geomatics 2016), and the BE determined that there will be no impacts to permanent water sources in the Analysis Area for the Project.

4. AGFD INCORRECTLY SUGGESTS A NEED FOR NEPA REVIEW

Following its suspect analysis of Project-related impacts to wildlife, AGFD (2018) suggests that the Project "…may require review under the National Environmental Policy Act (NEPA)." AGFD is mistaken. Per 40 C.F.R. § 124.9(b)(6), UIC permits are not subject to the environmental impact statement provisions of NEPA. Moreover, in response to prior challenges of Class III UIC permits, the EPA Environmental Appeals Board has drawn upon pertinent case law and the judicial doctrine of functional equivalency to establish that "the UIC permitting process is the functional equivalent of NEPA" 9 E.A.D. 290-291 (2000). Of note, EPA has long held, and courts have affirmed, that "NEPA is fulfilled where the federal action has been taken by an agency with recognized environmental expertise and whose procedures ensure extensive consideration of environmental concerns, public participation, and judicial review." 2 E.A.D. 575, 578 (1988), 911 F.2d 499 (1990). Similarly, EPA has noted that "courts have recognized that Federal regulatory action taken by an agency with recognized environmental expertise, when circumscribed by extensive procedures, including public participation for evaluation of environmental issues, constitutes the functional equivalent of NEPA's requirements." 1 E.A.D. 778 (1983).

By submitting its comments and raising its concerns, AGFD has clearly participated in the UIC permitting process. AGFD's request for "cooperation and/or coordination under the NEPA" (AGFD 2018) is thus invalid, as its participation reflects some of the primary considerations upon which the functional equivalency of the UIC permitting process and NEPA is based.

5. CONCLUSION

In summary, the comments provided by AGFD (2018) reflect a failure to acknowledge available Project-specific data and a failure to critically interpret the output of AGFD's own Environmental Review Tool, which AGFD used to imply that substantial effects to wildlife were expected to occur as a result of the Project. Moreover, AGFD ignored the fact that special-status species were explicitly considered in the analysis of the Project despite the author of AGFD (2018) directly receiving these analyses. Finally, AGFD (2018) plainly illustrates AGFD's misunderstanding of the permitting process by suggesting that EPA has a NEPA obligation under the UIC program. This is clearly not the case.

Contrary to the implications of AGFD (2018), potential effects to wildlife by Project activities have been disclosed and analyzed through the UIC permitting process and consultation with the USFWS for impacts to species listed under the ESA has been completed. As such, AGFD's concerns highlighted in AGFD (2018) have already been addressed.

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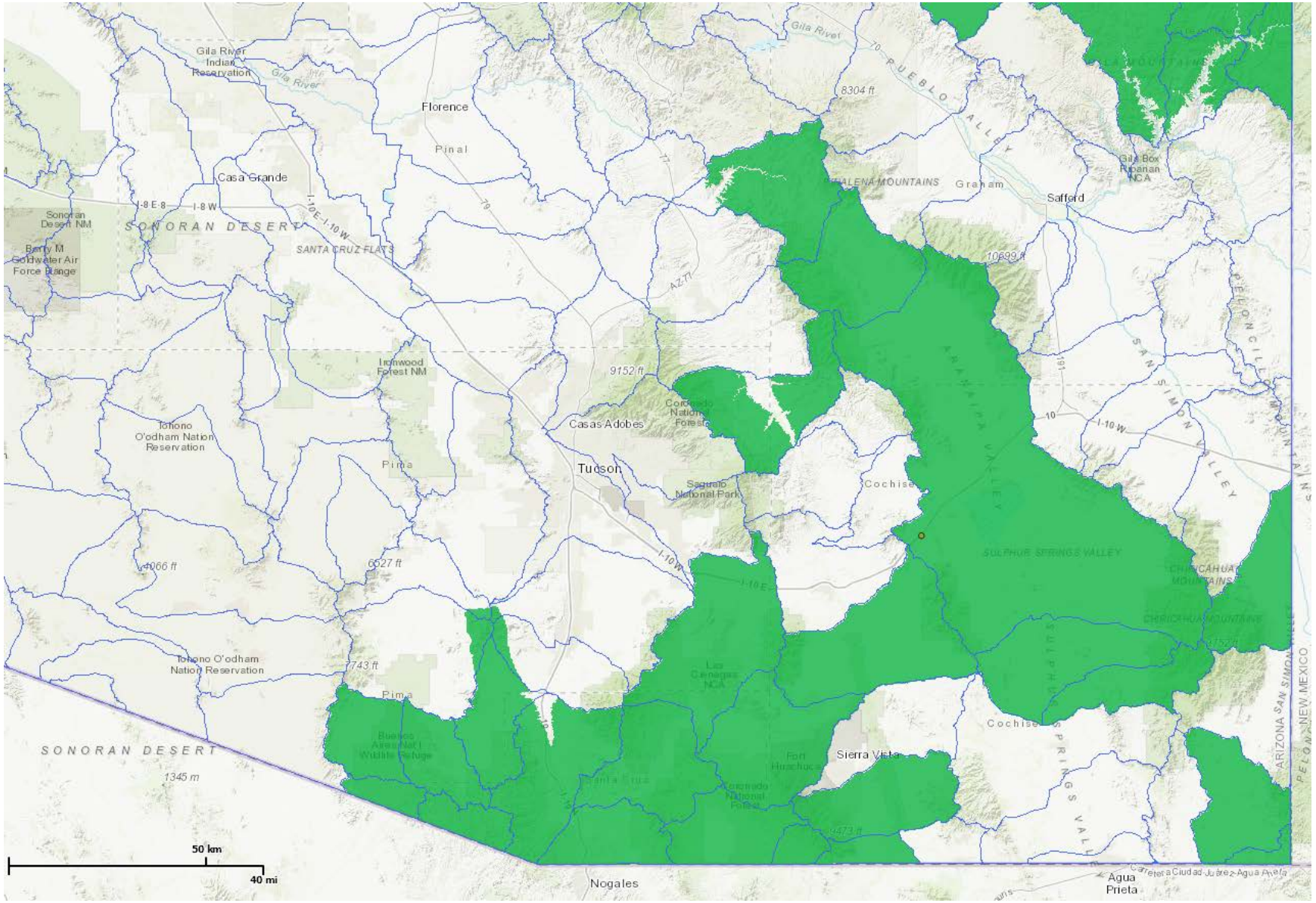
EXHIBITS



Blue lines delineate the HUC-10 watersheds used in the Environmental Review Tool. Green fill reflects the AGFD predicted distribution of Chiricahua leopard frog. The orange dot specifies the approximate location of the Project, but note that the dot is larger than the actual Project footprint.

AGFD predicted distribution of Chiricahua leopard frog (*Lithobates chiricahuensis*) in southeastern Arizona
Exhibit 1

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AGFD Predicted Distribution of Desert sucker (*Catostomus clarkii*)

1:116,762

0 1 2 4 mi

0 1.5 3 6 km

Sources: Esri, HERE, DeLorme, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Location of Project footprint relative to AGFD predicted distribution of desert sucker (*Catostomus clarkii*)
Exhibit 2

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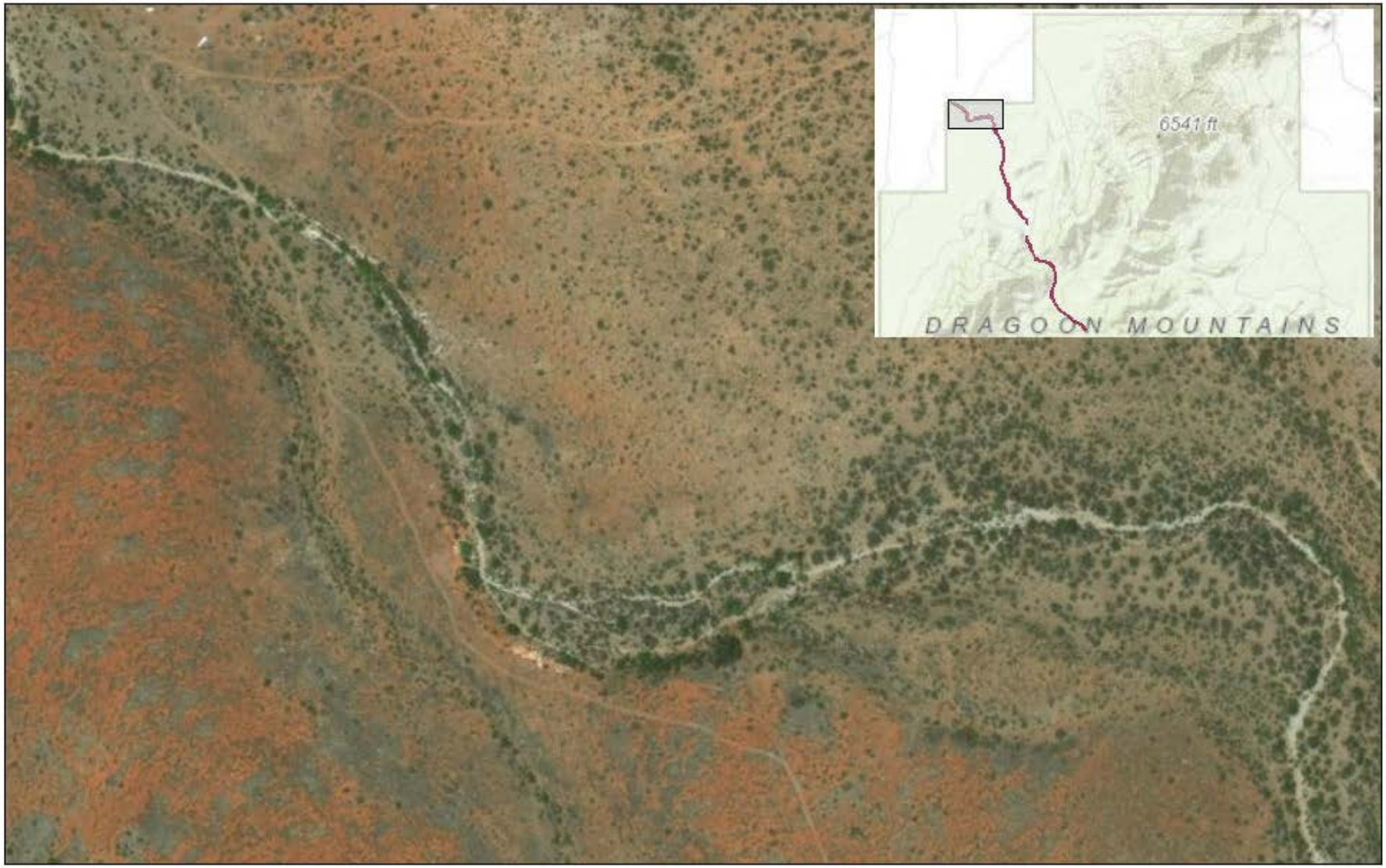

1:3,649

0 0.03 0.06 0.12 mi

0 0.05 0.1 0.2 km

Arizona Game and Fish Department
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the

Environmental Review Tool aerial imagery of portion of Dragoon Wash closest to Project footprint
Exhibit 3

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APPENDIX A

Aerial Imagery of Stock Tank within Project Footprint 1992-2016

Photo 1. April 1992

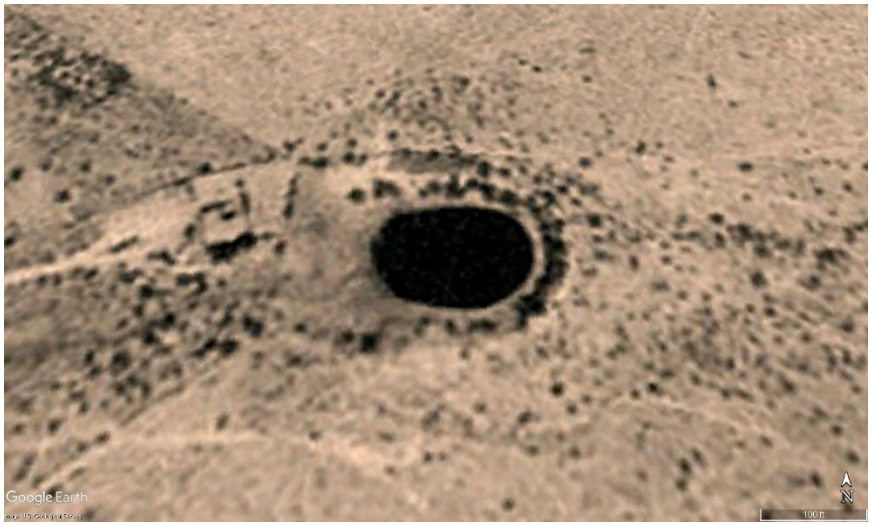

Photo 2. May 1996

Photo 3. March 2006

Photo 4. June 2007

Aerial Imagery of Stock Tank within
Project Footprint 1992-2016
Appendix A

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Photo 5. September 2010

Photo 6. June 2011

Photo 7. March 2013

Photo 8. February 2016